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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/825,572

04/15/2004

Michael J. North

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EXAMINER

SILVER, DAVID

ART UNIT

PAPER NUMBER

2128

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/825,572	<b>Applicant(s)</b> NORTH ET AL.	
	<b>Examiner</b> DAVID SILVER	<b>Art Unit</b> 2128	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 March 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7,9-12 and 16 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7,9-12 and 16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3/31/2008</u> .   | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

1. Claims 1-7 9-12 and 16 are currently pending in Instant Application.
2. The Instant Application is not currently in condition for allowance.

***Priority***

3. Priority is not claimed (**Effective Filing: 04/15/2004**).

***Information Disclosure Statement***

4. The information disclosure statement(s) (IDS) submitted on 3/31/2008 is/are in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement(s) is/are being considered if signed and initialed by the examiner.

***Response to Arguments***

***Response: 35 U.S.C. § 101***

5. Applicants are thanked for amending claim 1 to include a positively recited step of presenting results from the simulation. This is sufficient to overcome the 35 U.S.C. § 101 rejection. Accordingly, the rejection has been withdrawn.
6. Applicants are thanked for including physical hardware into newly presented claim 16. This is sufficient to overcome the 35 U.S.C. § 101 rejection. Accordingly, the claims are drawn to statutory subject-matter.

***Response: 35 U.S.C. § 112***

7. Applicants' remarks are sufficient to overcome the 35 U.S.C. § 112 enablement rejections. Specifically, the term "equivalencing" is expressly, precisely, and intentionally defined as demonstrated in Fig 9 and described in Specification's paragraph 50. Applicants have further admitted that "'equivalencing' two items, in the general sense, is well known" (Remarks: page 8)

***Response: 35 U.S.C. § 102***

8. Applicants' arguments regarding 35 U.S.C. § 102 have been fully considered but are unpersuasive and moot as a 35 U.S.C. § 102(b) rejection was not applied.

***Response: 35 U.S.C. § 103***

9. **Applicants argue:**

9.1 "The Examiner has taken the position that the Preliminary Roadmap Reference discloses all of the claimed features except "selecting from a set of infrastructure systems a subset comprising a plurality of interdependent infrastructure systems, and equivalencing the subset." The Examiner states that "Official Notice" is taken with respect to this limitation. The Examiner has now merely formally stated that Official Notice is being taken regarding facts that he has previously asserted. Applicants have already made clear that they traverse such assertions and request a citation to prior art teaching such facts. Applicants again reiterate such request." (Remarks: page 10)

9.2 "Any facts noticed should serve only to "fill in the gaps" in an insubstantial manner which might exist in the evidentiary showing made by the examiner to support a particular ground for rejection. However, the Examiner is relying on Office Notice to fill substantive limitations that go to the heart of patentability of the Applicants invention.

9.3 Applicants note specifically that the Examiner's assertion of "subset theory" is contrary to the courts view of the scope of Official Notice. It has been previously held that the Patent Office must provide evidentiary support for the existence and meaning of a theory, rather than merely relying on Official Notice. See, *In re Grose*, 592 F.2d 1161 (CCPA 1979). The Examiner has merely asserted a theory, with no proof that such was known in the art. Furthermore, Applicants have previously requested an explanation of the Examiner's previous statements regarding so- called "subset theory."

9.4 In addition, the Examiner has taken Official Notice regarding equivalencing yet continues to rely on the language of the reference that states "research on network equivalencing is also needed." Applicants again reiterate their prior statements regarding this argument. The cited language, rather than anticipating or rendering the limitation obvious or even supporting an Office Notice, provides a strong indication of the unfilled need and no recognition of the solution to the problem in the art. The Examiner has not cited a prior art reference that actually teaches the claimed limitation or solves the problem. The Examiner's taking of Official Notice that equivalencing is known when the references in the record clearly establish that such equivalencing was not known is improper.

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***Inadequacies of the Office Notice***

9.5 Regardless of the deficiencies of the Office Notices, the inadequacies in the Office Notice and the Office Action are clear upon closer evaluation.

9.6 The Examiner has cited Tab B, B-82 Top of the Preliminary Roadmap Reference, which states: "

(Remarks: page 11)

"Interdependency tools need to address large-scale interdependency issues that affect more than one infrastructure from a technical, economic, and national security perspective. Traditional modeling and simulation tools, while capable of addressing a subset of these issues for a portion of a single infrastructure, are not computationally capable of addressing the complexities and uncertainties associated with these issues on a national level. In particular, the number of infrastructure dependencies and dynamic feedback loops that need to be considered is prohibitively large (i.e., computationally intractable). New computational algorithms and supercomputing capabilities have the potential for efficiently and effectively addressing these modeling and simulation shortfalls. With enhanced computational capabilities, it would be possible to comprehensively address, for the first time, infrastructure dependencies and real-time interactions within a technical, economic, and security framework.

9.7 As is clear from this section, selecting from a set of infrastructure systems a subset comprising a plurality of interdependent infrastructures is not taught. While the cited paragraph does include the term "subset" and "infrastructure", an actual reading of the paragraph makes clear that the subset being referred to is a subset of "large-scale interdependency issues" not of infrastructure systems.

9.8 While the Examiner appears to be relying on some "motivation" provided by the Reference, this portion of the Preliminary Roadmap Reference, as well as the reference as a whole, does not provide any motivation to select from a set of infrastructure systems a subset comprising a plurality of interdependent infrastructures. Rather, the Reference states that current computer systems are only able to handle a portion of the issues associated with infrastructures due to their complexity. This provides motivation for, perhaps, an improved computer system that can address all of the issues. Applicants fail to see any suggestion from the teaching that there are issues associated with interdependent infrastructures to motivate someone to select a subset of interdependent infrastructures. The Reference is simply referring to an entirely different concept." (Remarks: page 12)

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9.9 "Subset theory [statements removed for brevity]" (Remarks: page 13)

10. **Examiner Response:**

10.1 Regarding subsection 1 *supra*, attention is drawn to MPEP 2144.03, which recites "To adequately traverse such a finding, an applicant must specifically point out the supposed errors in the examiner's action, which would include stating why the noticed fact is not considered to be common knowledge or well-known in the art. See 37 C.F.R. 1.111(b). See also Chevenard, 139 F.2d at 713, 60 USPQ at 241 ("[I]n the absence of any demand by appellant for the examiner to produce authority for his statement, we will not consider this contention."). A general allegation that the claims define a patentable invention without any reference to the examiner's assertion of official notice would be inadequate." Merely stating that the Applicants have "made clear that they traverse such assertions" is insufficient as it amounts to a general allegation.

10.2 Regarding subsection 2 *supra*, two part Official Notice was taken with respect to claim 1. Firstly, Official Notice was taken with respect to the subset comprising a plurality of interdependent infrastructure systems. Contrary to the statements provided in subsection 2 above, the "set theory" was not used as the basis of the Official Notice. Regarding the first aspect of the Official Notice, attention is drawn to MPEP 2144.04.VI.B, titled "Duplication of Parts", which recites, in part: "mere duplication of parts has no patentable significance unless a new and unexpected result is produced." Instead of selecting a single interdependent infrastructure system, duplicating and selecting a plurality of such is not afforded patentable significance.

Further, in view of KSR v. Teleflex Supreme Court ruling, it is asserted that one of ordinary skill in the art, in view of the design incentives and market forces, could have implemented the claimed variation of the part art, and the claimed variation would have been predictable.

See MPEP 2145 [R-6], X, B, "[A] person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely that product [was] not of innovation but of ordinary skill and common sense. In that instance the fact that a combination was obvious to try might show that it was obvious under § 103." KSR International Co.

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v. Teleflex Inc., 550 U.S. \_\_\_, \_\_\_, 82 USPQ2d 1385, 1397 (2007).

The TAB B reference clearly sets forth the intended path, guidance, market force, and design incentives for one of ordinary skill in the art to accomplish the claimed variation, as it clearly sets forth what needs to be done.

Secondly, the Official Notice was taken with respect to the equivalencing of the subset.

Applicants have merely restarted that the Previous Office Action takes Official Notices with respect to the equivalencing step and have argued that because the TAB B references provides a motivation to perform the limitation, it does not teach it. Attention is drawn to Applicants' remarks, submitted, 3/31/2008, page 8 section 112 paragraph 1, "Applicants note that the concept of 'equivalencing' two items, in the general sense, is well known for comparative applications." Thus, Applicants have admitted that equivalencing is conceptually well known and once again have not specifically argued as to why the Official Notice is improper.

10.3 Regarding subsection 6-8 *supra*, Applicants appear to have keyword-read the term "subset" and applied it to the claim's term "subset". A comprehensive reading of the cited passage would reveal the intention and motivation of computation of "infrastructure dependencies and real-time interactions within a technical, economic, and security framework of large-scale interdependencies that affect more than one infrastructure. From this it is seen that one would want tools that address "large-scale interdependency issues that affect more than one infrastructure". In order for these tools to be possible they would have to select at least a plurality of interdependent infrastructures which have interdependency issues.

10.4 Regarding subsection 9 *supra*, firstly, it is noted that the statements regarding were regarding set theory, not "subset theory". Secondly, the claims are rendered obvious in view of the Official Notice taken, not the "set theory". Applicants' statement that "one of ordinary skill would appreciate that selecting a subset of a set involves selecting [...] a smaller population form the overall genus" (Remarks: page 13) are based on speculations and are not supported by proof. To help understand set theory, the definition of "subset" is provided below:

"subset: a set whose members are members of another set; a set contained within another set" (Source: wordnet.princeton.edu/perl/webwn)

Accordingly, selecting each element of another set generates a subset of the other set.

***Response: Dependent claims***

11. Regarding claim 2, Applicants focus on 1 of the 5 (citation 1) sections cited in the rejection of the claim. From B-5 (last sentence) one can see that the gas and oil infrastructures reach every region of the country. Accordingly, selecting those two interdependent infrastructures (gas and oil) represents a geographic region (country).

Applicants are advised to review the TAB B references, in its entirety, to gain a full understanding of what it taught. The citations provided in the Office Actions are merely exemplary.

12. Regarding claim 3, Applicants focus on 1 of the 5 (citation 5) sections cited in the rejection of the claim.

Applicants appear to be arbitrarily choosing the citations references in the Office Action without taken the other citations into consideration, and without taking the reference as a whole into consideration. This amounts to a general allegation of patentability without actual analysis of both 1) the art as a whole and 2) the cited portions of the reference.

13. Regarding claim 4, attention is drawn to, for example, B-80 (cited in previous claims), "Each **infrastructure depends to varying degrees on electric power** for systems and facilities, as well as emergency backup power. [...] Another important example is the dependence of computers and computing systems on electric power. On the other hand, the energy infrastructures depend strongly on computers and computing systems for operations and communication." This section shows the two-way analysis that the energy infrastructures depend on computers, and computers depend on the energy infrastructures.

14. Regarding claim 7, the argument is based on a traversed argument of claim 1 (arguing that there are no disclosed multiple infrastructures). The argument against claim 1 was respectfully traversed and therefore the argument based on the traversed statements is moot.



***Newly Added Claim 16 / Claim Interpretation***

15. Limitations drawn to allowing, enabling or making optional a function's performance does not further limit a claim. As such, any prior art not explicitly prohibiting the performance of the function inherently anticipates the limitation. See MPEP 2111.04.
16. Regarding claim 16, all elements following the "information stored thereon for:" are interpreted as intended use for the stored "information". Further, the information is interpreted as non-functional descriptive subject matter.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

17. Claims 1-7, 9-12, 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over TOPCCIP's "TAB B, Preliminary Research and Development Roadmap for Protecting and Assuring the Energy Infrastructure" ("TAB B"), and further in view of Official Notice taken.

TAB B discloses: 1. A method for simulating interdependent infrastructures, comprising the steps of:

selecting from a set of infrastructure systems a subset comprising interdependent infrastructure systems (**B-80; page B-1 middle, B-18 middle, B-57 middle; B-42; section 3.2.2, section 3.3 in general**);

creating a plurality of agents to interact with the subset (**TAB B: B-23 top**); and

simulating multi-scale agent interactions; presenting results of the simulating (**B-21 middle, B-25 bottom, B-41 middle, B-47 bottom half**).

Although TAB B discloses selecting a single subset comprising a single infrastructure (**B-82 para 1**), TAB

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B does not expressly disclose: selecting from a set of infrastructure systems a subset comprising a plurality of interdependent infrastructure systems, and equivalencing the subset. Official Notice is taken with respect to this limitation. TAB B provides explicit motivation in the selection of subsets as claimed in **(B-82 top)**, by stating:

"Traditional modeling and simulation tools, while capable of addressing a subset of these issues for a portion of a single infrastructure, are not computationally capable of addressing the complexities and uncertainties associated with these issues on a national level. In particular, the number of infrastructure dependencies and dynamic feedback loops that need to be considered is prohibitively large (i.e., computationally intractable). **New computational** algorithms and supercomputing capabilities have the potential for efficiently and effectively addressing these modeling and simulation shortfalls. With enhanced computational capabilities, it would be possible to comprehensively address, for the first time, infrastructure dependencies and real-time interactions within a technical, economic, and security framework."

(emphasis by Examiner)

TAB B also provides explicit motivation for "equivalencing", as claimed, on page B-48, by stating:

"Accurate models of the system. The August 1996 western outage revealed that system models had not been adequately calibrated or tested for the unusual circumstances and event sequence that led to the outage. Model calibration is expensive and needs to be improved. Research on network "equivalencing" is also needed."

The two "missing" features from the primary references are clearly set forth as the intended path and guidance in the disclosure of TAB B. They provide for the market force, the drive, and the motivation in doing so.

It is further noted that in accordance with *set theory* selecting a whole set is identical to selecting a subset which contains all elements of the set. Therefore, selecting a whole set is equivalent and identical to selecting a subset containing all elements of the set.

TAB B discloses: 2. The product of claim 1, wherein the subset is being selected to represent a geographic region **(B-19 middle, B-32 middle, B-35 top half, B-49 top half, B-50 top half)**.

TAB B discloses: 3. The method of claim 1, further comprising the steps of: selecting components for two way analysis, and wherein the simulation occurs across concurrent time **(B-25, B-5 top, B-9 top, B-20 bottom; Table B.4 item 6.2)**.

TAB B discloses: 4. The method of claim 1, further comprising the steps of: selecting a plurality of infrastructures to simulate; and connecting the infrastructures, including the steps of screening candidate interconnections **(B-49 bottom half: screening tools)**; and assigning candidates a likelihood of

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connection **(B-11 top)**.

TAB B discloses: 5. The method of claim 1, wherein the equivalencing step includes the steps of: identifying connections extending outside of the subset **(B-3 middle; B-54 bottom half)**; and calculating flow limit for each connection extending outside the subset **(B-71 middle; B-72 middle)**.

TAB B discloses: 6. The method of claim 1, wherein the creating agents step includes the steps of: creating agents from templates and data for a infrastructure; and creating agents at equivalenced connections **(B-48 bottom; Table B.6 item 1.4; B-50 top)**.

TAB B discloses: 7. The method of claim 1, wherein the simulating step includes the steps of: advancing agent conditions through time; re-equivalencing the infrastructure **(B-5 middle)**; and continuing the simulation until a steady state is achieved **(B-47 middle)**.

As per claims 16 and 9-12, note the rejection of claims 1, 4-7, 1, 5, 7 above, respectively. The Instant Claims recite substantially same limitations as the above-rejected claims and therefore rejected under same prior-art teachings.

### ***Support for Amendments and Newly Added Claims***

Applicants are respectfully requested, in the event of an amendment to claims or submission of new claims, that such claims and their limitations be directly mapped to the specification, which provides support for the subject matter. This will assist in expediting compact prosecution. MPEP 714.02 recites: "Applicant should also specifically point out the support for any amendments made to the disclosure. See MPEP § 2163.06. An amendment which does not comply with the provisions of 37 CFR 1.121(b), (c), (d), and (h) may be held not fully responsive. See MPEP § 714." **Amendments not pointing to specific support in the disclosure may be deemed as not complying with provisions of 37 C.F.R. 1.131(b), (c), (d), and (h) and therefore held not fully responsive.** Generic statements such as "Applicants believe no new matter has been introduced" may be deemed insufficient.

### ***Conclusion***

18. All claims are rejected.

19. The Instant Application is not currently in condition for allowance.

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20. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Silver whose telephone number is (571) 272-8634. The examiner can normally be reached on Monday thru Friday, 10am to 6:30pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini Shah can be reached on 571-272-2279. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Kamini S Shah/

Supervisory Patent Examiner, Art Unit 2128

/DS / \_\_\_\_\_

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David Silver, Patent Examiner

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